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## Relativity of a Woman

Jessica Ridgway  
Florida State University, [jridgway@fsu.edu](mailto:jridgway@fsu.edu)

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## Relativity of a Woman

Jessica L. Ridgway, Florida State University, USA

Keywords: Subtraction Cutting, Digital Textile Printing, Optical Illusion

### Contextual Review and Concept

The proposed design challenge was two-fold: incorporate innovative cutting methods to create a wearable 3D form; and engineer a textile print to suit the 3D form. The researcher used subtraction cutting methods and implemented an optical illusion textile print resulting in the creation of “Relativity of a Woman.” According to Julian Roberts, subtraction cutting can simply be defined as “shaped holes cut from huge sheets of cloth through which the body moves” (Roberts, 2013, pp. 16). Indeed, subtraction cutting is a design process that occurs through the removal of fabric, instead of the traditional method of adding pieces of fabric together (McQuillan, Rissanen, & Roberts, 2013; Stanley, 2017). Hence, subtraction cutting allows the designer to abandon any preconceived ideas about the form while allowing the fabric to guide the design process (Bray, 2015). In order to ground this experimental method, the researcher sought to incorporate her current body of research into the textile print design.

The researcher’s current body of work explores both the perception of body shape and the use of optical illusions in textile prints. Therefore, these two areas of research were integrated into the creation of an engineered textile print to further build upon this body of work. “Relativity of a Woman” is a commentary on today’s societal ideals and the shift that is occurring from the traditional hourglass shape to a more fit, rectangular physique (Ridgway, Parsons, & Sohn, 2016). To reflect this change in the ideal figure, the textile print presented here accents the bust with oversized spiraling circles and exaggerates the hips with excess fabric and curved lines extending out, while the lines on the torso of the body are rectangular in shape; a nod to the evolution of the societal ideal. Furthermore, the researcher incorporated Albers’s theory of color relativity using both line and color to draw the viewer’s eye to the waist of the body. Indeed, Albers’s theory of color relativity states that a “color has many faces and one color can be made to appear as two different colors depending on the colors surrounding it” (Albers, 1963, pp. 76). The use of color relativity creates an optical illusion, which is visible when the viewer sees the garment from a distance. When standing further back from the garment, the viewer will see multiple hues of blue and pink in the textile print (i.e. aqua/turquoise/cerulean and magenta/purple/berry); however, this effect is merely an illusion as the print is comprised of only three colors. Additionally, the illusion of movement is created in the textile print through the stacking of squares and use of spatial effects. Spatial effects occur when darker colors appear to recede into the background while lighter colors give the appearance of coming to the foreground (Zelanski & Fisher, 2010). The combination of subtraction cutting and creating an engineered print forced the researcher to explore new approaches to her typical design process.

### Process and Technique

The process began with exploring subtraction cutting at the most basic level. While working through Julian Robert’s handbook (2013), several small prototypes were hand stitched and deconstructed in order to gain a better understanding of subtraction cutting and how the 3D form would interact with the body. During this initial prototype phase, and if the design appeared promising, the researcher would move to the ½ scale form to

assess the interaction with the body more closely. After several iterations the researcher opted to incorporate a block bodice front-and-back into the design. This allowed for the 3D form to fit over the body while still allowing for the body to internally sit in the holes that had been cut. A final ½ scale prototype was stitched using a basting stitch so that it could be taken apart to visualize the 2D textile print placement. Once the ½ scale prototype was complete, the researcher placed it on the form and began to annotate the fabric with the direction of drape and placed notches to identify which parts of the fabric would be joined (See figure 1). This process was essential to the engineering of the textile print. Once the markup was complete the researcher unstitched the prototype to use as a road map for print placement.

The researcher then digitized the bodice block pieces and imported them into Photoshop. The researcher, through a series of mathematical equations, scaled the ½ scale singular pattern piece to create a full-scale layout. The initial textile print was created in adobe illustrator using color relativity to create an optical illusion print. The print, a series of colored lines, was then manipulated in Photoshop and placed on multiple layers to engineer the print to the pattern piece (See figure 2 for final Photoshop file). Using the ½ scale marked up fabric, the researcher paid careful attention to match lines and change direction of the lines in the print according to the position and drape of the fabric on the body. Finally, the subtraction cut pattern piece with the engineer print was printed using a digital textile printer (See figure 3 for final fabric prior to being sewn).

### Design Contribution and Innovation

The contribution of this work is two-fold: the work adds to the growing body of design research investigating the impact of experimental design processes on making. Several researchers have investigated subtraction cutting as a more sustainable method of designing; however, little has been published on engineering prints within subtraction cut patterns. Second, this work contributes to design scholarship with the novel approach of the use of color relativity to create an optical illusion textile print. It is the researcher's hope that this work might serve as a catalyst for future inquiry pertaining to design using new and innovative methods.

Figure 1.



Figure 2.

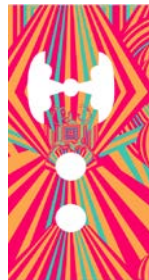
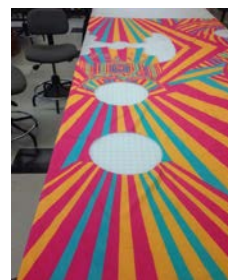


Figure 3.



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